

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B. E. SEMESTER: VI**  
**Industrial Engineering**

Subject Name: **Product Development and Value Engineering**  
 Subject Code: **161502**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
4	0	2	6	70	30	50

Sr. No	Course Content	Total Hrs.
<b>A.</b>	<b>Product design:</b> Product classification and characteristics, product analysis, product design function, design aids, product experience, technology of product. Various aspects of design viz. functional, aesthetic, visual, ergonomic and part manufacturing. Various stages of design, marketing research, feasibility studies, standardization, defects investigation. Selections of materials, important engineering materials, new materials, process selection criteria and process design.	24
<b>B.</b>	<b>Ergonomics:</b> Scope and objectives of ergonomic, applications of human factors in engineering, ergonomics and product design.	10
<b>C.</b>	<b>Value Engineering</b> <b>a.</b> <u>Introduction:</u> concept of value engineering, advantages and applications, problem recognition, role of creativity. <b>b.</b> <u>Analysis of Functions</u> : Functions, use, esteem and exchange values, basic V/S secondary functions, using and evaluating functions.	20
	<b>c.</b> <u>Value engineering techniques (14 Hours)</u> : Selecting products and operations for VE action, determining and evaluating functions, assigning rupee equivalents, developing alternative means to required functions, decision making for optimum alternatives.	14

## Reference Books:

1. (a) Product design & process Engg. By Niebel & deeper (McGraw hill)  
(b) Industrial design by Doren (McGraw Hill)  
(c) Designing for Industry by Ashford, Pitman
  
2.
  - a) Value Analysis by Zimmermann
  - b) Human factors in engineering design by Chapines & Gardine, Wiley
  - c) Value engineering in manufacturing by ASTME prentice
  - d) Value management by Heller, Addison Wasley
  - e) Value analysis by Ougbson Pitman
  - f) Value engineering A systematic approach by Mudge (McGraw Hill)